CLAIMS:

1.   3,4-bis(1-sulfoxyalkyl)thiophene represented by formula [1] below:

$$CH_2(CH_2)_nCH_2OSO_3R$$
$$CH_2(CH_2)_nCH_2OSO_3R$$

[1]
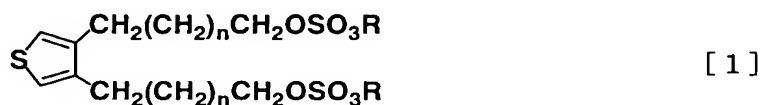
(where R denotes a hydrogen atom, alkali metal atom, or alkaline earth metal atom, and n denotes an integer of 1 to 3.)

2.   3,4-bis(1-hydroxyalkyl)thiophene represented by formula [2] below:

$$CH_2(CH_2)_nCH_2OH$$
$$CH_2(CH_2)_nCH_2OH$$

[2]
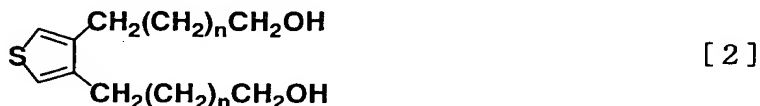
(where n denotes an integer of 1 to 3.)

3.   3,4-bis(1-sulfoxypropyl-3-yl)thiophene represented by formula [3] below:

$$CH_2CH_2CH_2OSO_3R$$
$$CH_2CH_2CH_2OSO_3R$$

[3]

(where R denotes a hydrogen atom, alkali metal atom, or alkaline earth metal atom.)

4.   3,4-bis(1-hydroxypropyl-3-yl)thiophene represented by formula [4] below:

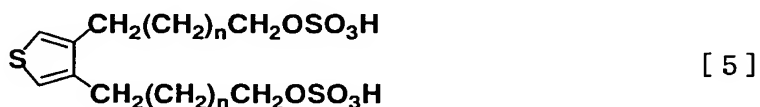$$CH_2CH_2CH_2OH$$
$$CH_2CH_2CH_2OH$$

[4]

5.   Sulfoxyalkynylthiophene defined in claim 1 or 3 above wherein the alkali metal atom is sodium or potassium.

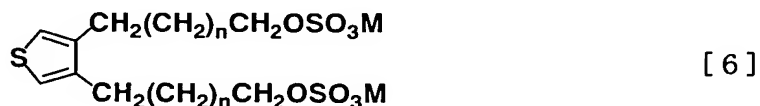6.   A process which comprises steps of reacting 3,4-bis(1-hydroxyalkyl)thiophene represented by formula [2] below:

$$\text{S} \overbrace{}^{\text{CH}_2(\text{CH}_2)_n\text{CH}_2\text{OH}}_{\text{CH}_2(\text{CH}_2)_n\text{CH}_2\text{OH}} \qquad [2]$$

(where n denotes an integer of 1 to 3);
       with a sulfur trioxide compound to give 3,4-bis(1-sulfoxyalkyl)thiophene represented by formula [5] below:

$$\text{S} \overbrace{}^{\text{CH}_2(\text{CH}_2)_n\text{CH}_2\text{OSO}_3\text{H}}_{\text{CH}_2(\text{CH}_2)_n\text{CH}_2\text{OSO}_3\text{H}} \qquad [5]$$

(where n is defined as above);
       and reacting it with an alkali metal compound or alkaline earth metal compound to give a metal salt of 3,4-bis(1-sulfoxyalkyl)thiophene represented by formula [6] below:

$$\text{S} \overbrace{}^{\text{CH}_2(\text{CH}_2)_n\text{CH}_2\text{OSO}_3\text{M}}_{\text{CH}_2(\text{CH}_2)_n\text{CH}_2\text{OSO}_3\text{M}} \qquad [6]$$
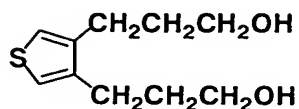
(where M denotes alkali metal atom or alkaline earth metal atom and n is defined as above.)

7.   A process which comprises a step of reducing 3-[4-(3-hydroxy-prop-1-ynyl)-thiophen-3-yl]-prop-2-yn-1-ol represented by formula [7]:

$$\text{S} \overbrace{}^{\text{C}\equiv\text{CCH}_2\text{OH}}_{\text{C}\equiv\text{CCH}_2\text{OH}} \qquad [7]$$

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to give 3,4-bis(1-hydroxy-propyl-3-yl)thiophene
represented by formula [4] below.

$$S \underset{CH_2CH_2CH_2OH}{\overset{CH_2CH_2CH_2OH}{\big<}}$$

[4]

5   8.   The process for producing a metal salt of
sulfoxyalkynylthiophene as defined in claim 6, wherein the
alkali metal atom is sodium or potassium.

9.   The process for producing a metal salt of
10 sulfoxyalkynylthiophene as defined in claim 6, wherein the
sulfur trioxide compound is sulfur trioxide, sulfur
trioxide·1,4-dioxane complex, sulfur trioxide·DMF
(N,N-dimethylformamide) complex, or sulfur trioxide·pyridine
complex.